

PRELIMINARY REMOVAL ASSESSMENT

July 26, 1989

I. SITE: Chevron Chemical Company

LOCATION: Council Bluffs, Iowa

II. EP&R CONTACT: Paul Doherty

SPFD CONTACT: Anne Carper

III. BACKGROUND

A. Site Description

1. Site Location - Chevron Chemical Company is located southeast of Council Bluffs, Iowa (figure 1), about one-half mile south of Interstate Highways 29 and 80 in the NW $\frac{1}{4}$, NE $\frac{1}{4}$, SE $\frac{1}{4}$ of S12, T74N, R44W. The site is approximately 5 acres, measuring about 377 feet in the east-west direction by 412 to 742 feet in the north-south direction (figure 2).

2. General Facility Description - The site is nearly flat with grass cover. A number of structures are located on the property, generally in the east-central portion of the property. These structures include an office, a warehouse, a small manufacturing facility, a former liquid-products filling shed, and storage tanks. A railroad siding enters the property in the extreme southeastern corner and extends northward on the east side of the warehouse (figure 2). The site is located in a commercial area with the nearest residence located one-quarter mile away.

B. Waste Management

1. Quantities/Type of Waste Materials Handled - The Chevron Chemical Company at Council Bluffs, Iowa, began to operate in 1966. Operations at the plant consisted primarily of blending and bulk handling of agricultural chemicals, herbicides, and pesticides. The operation at the site ended in 1982, and the facility was used for storage. Past investigations by the company's contractor (Dames and Moore) had revealed low-level soil contamination at the site. The principal contaminants were aldrin and dieldrin.

2. Waste Management Practices - During past operations, spillages occurred a number of times at the Chevron Chemical Company facility. Spills had allegedly occurred around the storage tanks and the warehouse. It was reported that a spill of propionic acid had occurred east of the railroad tracks near the warehouse according to the 1982 Dames and Moore's report. The

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upper 1 foot of soil was excavated from this area and the surface was scrapped a number of times after removal of potentially contaminated soils. There is no available information regarding disposal of the contaminated soils.

No chemicals were disposed at the site; however, two pieces of equipment were reportedly buried on site at a depth of 3 to 4 feet. The buried equipment was believed to be a potential source of groundwater contamination. The first piece of equipment was a metallic dust collector measuring approximately 4 feet by 10 feet which was crushed prior to burial. The 1982 investigation by Dames and Moore confirmed the presence of the equipment at a depth of approximately 3 feet (figure 2 - Buried Equipment Area 1). The second object was believed to be an iron duct or pipe measuring about 12 inches in diameter and 12 to 14 feet in length. This object was allegedly buried at the Buried Equipment Area 2 (figure 2); however, the 1982 investigation did not confirm the location. There remains some confusion as to whether the equipment is buried in Area 2.

3. Previous Site Investigation Activities - An initial hydrogeologic investigation was performed by Dames and Moore in 1982. The investigation was an attempt to locate the buried equipment and to assess the contamination at the site. The investigation disclosed the contamination of the on-site soil with pesticides. Four monitoring wells were also installed at the site during the investigation to assess the potential of groundwater contamination. Chemical analyses of the groundwater revealed no evidence of contamination.

In 1984, due to contamination of the on-site soil, the Environmental Protection Agency (EPA) Region VII requested Chevron Chemical conduct a supplemental investigation at the site. In July 1987, Dames and Moore conducted an investigation at the site which included installation of a fifth monitoring well at the buried equipment area and collection of additional on-site soil and water samples. This investigation also detected low-level soil contamination with aldrin, dieldrin, and other pesticides. No evidence of groundwater contamination was found.

IV. THREAT

A. Evidence of Release

1. Type and Concentration of Contaminants - Both 1982 and 1987 investigations by Dames and Moore at the site revealed low levels of aldrin and dieldrin contamination.

Aldrin was found ranging from 0.3 mg/kg to 6 mg/kg at 0 to 6 inches. Dieldrin was found ranging from 7 to 38 mg/kg at 0 to 6 inches. Aldrin and dieldrin were also found at depth (3 feet at the buried equipment area) with concentrations of 0.27 and 1.28 mg/kg, respectively. Other pesticides (4,4-DDE, heptachlor) were detected at the site; however, concentrations were not

significant. No contaminants were detected in the groundwater during either investigation.

2. Extent of Contamination - Since water samples have not detected groundwater contamination, the potential of release of the contaminants into the area groundwater by leaching is considered unlikely. This is further supported by low solubilities of aldrin (17 parts per billion at 25° C) and dieldrin (200 parts per million at 25° C) in water and their tendency to be adsorbed by organic materials in the surface soils. The contamination appears to be limited to near-surface soils.

B. Threat to Public Health or Welfare

Analytical results of samples collected in 1982 and 1987 did not find leachate of the contaminants into the area groundwater. Therefore, the threat of contaminating the groundwater posed by the on-site contaminants is unlikely.

The site has a fence surrounding the property which restricts the area to public access. The site is located in a commercial area where people may potentially be exposed to the contaminants via direct contact with surface runoff and by inhalation.

Both aldrin and dieldrin are animal positive carcinogens, causing increases in a variety of tumors in rodents. Aldrin and dieldrin are both toxic to the reproductive system and teratogenic. Reproductive effects include decreased fertility, increased fetal death, and effects on gestation; while teratogenic effects include cleft palate, webbed foot, and skeletal abnormalities. Chronic effects attributed to aldrin and dieldrin include liver toxicity and central nervous system abnormalities. Both pesticides, and especially dieldrin, have been associated with large-scale bird and mammal kills in treated areas. Experimental feeding studies have shown that the chemicals are quite toxic to terrestrial wildlife and domestic animals at low levels. Aldrin and dieldrin are a subgroup of the chlorinated cyclic carbon pesticides of which production was banned in 1984 by EPA under the Federal Insecticide, Fungicide, and Rodenticide Act.

The Agency for Toxic Substances and Disease Registry (ATSDR) has postulated acceptable soil concentrations for these compounds based on the compound's cancer potency factor relative to 2,3,7,8-TCDD. The allowable soil concentration is dependent on the type of exposure as indicated in the following tables:

Allowable Soil Concentration for Types of Exposure

	<u>Residential</u>	<u>Commercial/Industrial</u>
2,3,7,8-TCDD	1 ppb	10 to 20 ppb
Aldrin	14 ppm	140 to 280 ppm
Dieldrin	5.1 ppm	51 to 102 ppm

The type of exposure at this site is considered to be commercial/industrial. The corresponding soil concentration for the direct contact/inhalation hazard at commercial/industrial sites are aldrin at 140 to 280 parts per million (ppm) and dieldrin at 51 to 102 ppm.

C. Threat to the Environment

Threats to the environment include further contamination of surrounding properties and airborne releases from contaminated soils that might be disturbed via wind and water erosion. In addition, aldrin and dieldrin are extremely persistent in the environment due to extremely low volatility (aldrin and dieldrin vapor pressures are 2.3×10^{-5} and 1.78×10^{-7} mm mercury at 20° C, respectively).

V. EVALUATION OF THE POTENTIAL FOR A REMOVAL ACTION

Sampling performed has not revealed significant contamination of on-site soils. Although isolated samples have shown contamination as high as 38 mg/kg dieldrin, this level of contamination is not pervasive across the site and is still below the proposed acceptable commercial/industrial exposure concentration (i.e., 51 ppm to 102 ppm). Based on the above, it is determined that the site does not qualify for a removal action.

VI. RECOMMENDATION

It is our finding that the available data does not justify a removal action. In order for EP&R to re-evaluate this determination, it would be necessary to document more extensive contamination, both in terms of concentration levels and surface area involved. A site-specific health advisory from ATSDR which documents an unacceptable exposure situation would also justify a removal action.